

In order to detect the amplitude and phase of object light with a high SNR, an image pickup apparatus includes an image pickup unit having semiconductor photodetection elements arrayed two-dimensionally, a light-emitting element unit for emitting reference light having a predetermined frequency difference with respect to the frequency of light incident on the image pickup unit, and a wave synthesizer for synthesizing the incident light with the reference light from the light-emitting element unit and guiding the resultant light to the image pickup unit.

5

10